A3100-2

July 15, 1989, Volume 195, Number 2

# JOURNAL

OF THE AMERICAN VETERINARY MEDICAL ASSOCIATION

**Forum**
National Board Examination revisited ..... 166

**Food for thought for food animal veterinarians**
One bad apple affects a barrel of apples ..... 168

**Letter**
Bovine somatotropin and nutrient density ..... 169

**Council Report**
AVMA guidelines for dealing with AIDS-infected persons in the veterinary workplace ..... 190

**The *Human* Side of Veterinary Medicine**
The previous veterinarian ..... 194

Risk factors for lower respiratory tract disease in a cohort of feedlot cattle ..... 207

800155252 1 071589 2 23
CONGRESSIONAL INFO SERV
ATTN: KIANKA STAT REF INDEX
4520 EAST WEST HWY
BETHESDA MD 20814

JOURNAL
OF THE AMERICAN VETERINARY MEDICAL ASSOCIATION

American Veterinary Medical Association, 1989
All Rights Reserved

**Vol 195 July 15, 1989 No. 2**
**JAVMA 195 (2) 161-280 (1989)**
**ISSN 0003-1488**

Interpretive Summaries of Articles in This Issue 164

Letters
Bovine somatotropin and nutrient density 166
"He would always want me to care, always to care" 167
Residencies and advanced degrees 167
Human anthrax 167

Food for thought for food animal veterinarians
One bad apple affects a barrel of apples—*John B. Herrick* 168

Guest Editorial
Challenges to veterinary constituencies flowing from the PNVEP study: An epilogue—*William Pritchard* 170

News
**Edge of Education**—Veterinary education programs for the 21st Century 171
**AVMA at Work**—Animal welfare issues addressed 175
AVMA supports proposed rulings 178
Committee seeks new veterinary employment opportunities 180
**Regulatory Front** 181
**Practice Management Corner**—How do employees feel about working in a veterinary practice? 182
**Awards and Honors** 183
**Student and School Scenes** Student AVMA convenes at NCSU 184
**Out and About** Veterinarian has date with space 185
**Deaths** 186

Forum
National Board Examination revisited—*R. Leland West* 188

Council Report
AVMA guidelines for dealing with AIDS-infected persons in the veterinary workplace 190

The *Human* Side of Veterinary Medicine
The previous veterinarian—*Jacob Antelyes* 194

Special Commentary
Zoologic medicine, comparative medicine, and veterinary medical education—*Howard D. Martin* 196

Food Animal Economics
Use of the partial farm budget technique to predict the economic impact of the flock management decision to use B-mode ultrasonographic pregnancy diagnosis—*D. J. Sprecher, W. B. Ley, W. D. Whittier, J. M. Bowen, C. D. Thatcher, K. D. Pelzer, and J. M. Moore* 199

Reports of Original Studies
Risk factors for lower respiratory tract disease in a cohort of feedlot cattle—*B. H. Alexander, D. W. MacVean, and M. D. Salman* 207

Clinical use of the neuromuscular blocking agents atracurium and pancuronium for equine anesthesia—*S. V. Hildebrand, M. Holland, V. S. Copland, D. Daunt, and N. Brock* 212

Use of radionuclide imaging to identify malignant mammary tumor bone metastases in dogs—*Gregory K. Ogilvie, Roger V. Allhands, and H. A. Reynolds* 220

Clinical Reports
Caval syndrome in a *Dirofilaria immitis*-infected dog treated with dichlorvos—*Kathryn A. Eaton and Thomas J. Rosol* 223

Bilateral conjunctival masses in two dogs—*Christopher J. Murphy, Roy W. Bellhorn, and Nedim C. Buyukmihci* 225

Pulmonary atresia with intact ventricular septum and agenesis of the ductus arteriosus in a pup—*Donald J. Brown and Donald F. Patterson* 229

Atlantoaxial subluxation and absence of transverse ligament of the atlas in a dog—*Alastair G. Watson and Alexander de Lahunta* 235

Primary teat neoplasia in two yearling heifers—*Troy S. Ford, Michael W. Ross, Helen M. Acland, John B. Madison* ..... 238

Tarsal fractures in a heifer and a bull—*F. H. Welker, P. D. Modransky, D. M. Rings, and B. L. Hull* ..... 240

Reports of Retrospective Studies

Neurologic abnormalities as the predominant signs of neoplasia of the nasal cavity in dogs and cats: Seven cases (1973-1986)—*M. O. Smith, Jane M. Turrel, Cleta Sue Bailey, and Gary R. Cain* ..... 242

Pulmonary thromboembolism associated with immune-mediated hemolytic anemia in dogs: Ten cases (1982-1987)—*Mary Kay Klein, Steven W. Dow, and Rodney A. W. Rosychuk* ..... 246

Economic Note

Size and practice density of local veterinary service areas, 1988—*J. Karl Wise* ..... 251

What Is Your Diagnosis?

*Paul E. Howard and John L. Scheels* ..... 253

Book Reviews

Sarcocystosis of Animals and Man ..... 228
Veterinary Clinical Immunology: From Classroom to Clinics ..... 234
The Domestic Cat: The Biology of Its Behaviour ..... 250

Abstracts of Selected Reports

Prevalence of *Cryptosporidium* infection in dairy calves in western Washington ..... 211
Effects of intermittent and continuous administration of decoquinate on bovine coccidiosis in male calves ..... 219
Serum chemical profile of feeder pigs, as influenced by market stress and feeding regimen ..... 241

Announcements

Certification Examinations ..... 205
Coming Meetings ..... 255
Foreign Meetings ..... 257
Educational Opportunities ..... 258
Applications for Membership ..... 259

Classified Ads ..... 261

# Coming Soon . . .

## August 1

Edge of Education—Learning to learn

Topics in Drug Therapy—Use of $\alpha_2$-adrenergic receptor antagonists (M. E. Gross and W. J. Tranquilli)

Reflections—Why do we become veterinarians? (W. O. Keefer)

Council Report—Canine and feline immunization guidelines

Legal Brief—Veterinary medical associations, state, government, and the courts (H. W. Hannah)

## August 15

Research Roundup—Swine reproductive failure syndrome mystifies scientists

The *Human* Side of Veterinary Medicine—Emotion: The inescapable element in practice (J. Antelyes)

Council Report—AVMA guide for veterinary medical waste management

Economic Note—Fringe benefits received by veterinarians, 1987 (J. K. Wise)

Evaluation of heparin for prophylaxis of equine laminitis (J. K. Belknap and J. N. Moore)

# Size and practice density of local veterinary service areas, 1988

To understand more about the distribution of US veterinary practices and their geographic market areas, the 1988 AVMA Biennial Economic Survey included 3 questions that focused on a practice's community size, the mile radius of the geographic veterinary service area, and the number of other practices within the defined veterinary service area providing the same type of veterinary services.[1]

The percentage distribution of US veterinary practices was estimated by type of practice for 6 community sizes: rural area (less than 2,500 population); small town (2,500 to 50,000); moderate-size urban area (50,001 to 500,000), city and suburb; and large-size urban area (500,001 or more), city and suburb (Table 1).

A comparison of the 1988 distribution of veterinary practices across community sizes with the corresponding 1981 distribution suggests that certain shifts have taken place from 1981 to 1988 (Table 2).[2] The proportion of equine practices in rural areas and small towns has increased from 39 to 44% from 1981 to 1988, and in moderate-size urban areas has decreased from 34 to 29%. Also, the distribution of large animal exclusive practices has shifted somewhat from rural areas and small towns to moderate-size urban areas. Specifically, the proportion of large animal exclusive practices located in moderate size urban areas has increased from 9% in 1981 to 19% in 1988.

In Table 2, results also suggest that there has been a shift in the distribution of small animal exclusive practices from moderate- and large-size urban areas to rural areas and small towns. Specifically, the proportion of small animal exclusive practices located in rural areas and small towns has increased from 30% in 1981 to 42% in 1988. Likewise, the proportion of small animal exclusive practices in

*Table 1—Percentage distribution of US veterinary practices by community size, 1988*

| | Equine predominant (%) | Large animal exclusive (%) | Large animal predominant (%) | Mixed animal (%) | Small animal predominant (%) | Small animal exclusive (%) |
|---|---|---|---|---|---|---|
| Rural area (less than 2,500) | 8.4 | 27.2 | 50.1 | 22.0 | 10.1 | 4.5 |
| Small town (2,500 to 50,000) | 35.7 | 47.4 | 44.8 | 64.7 | 63.3 | 37.3 |
| Moderate urban (50,001 to 500,000) | | | | | | |
| City | 3.5 | 3.5 | 1.8 | 2.4 | 7.9 | 14.6 |
| Suburb | 25.9 | 14.9 | 2.3 | 9.2 | 10.1 | 17.9 |
| Large urban (500,001 or more) | | | | | | |
| City | 8.4 | 1.0 | 0.5 | | 3.2 | 13.1 |
| Suburb | 18.2 | 5.3 | 0.5 | 0.5 | 4.7 | 11.9 |
| Total | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| | (143)* | (114) | (221) | (207) | (316) | (268) |

*Number of usable responses.

*Table 2—Distribution of US veterinary practices by community size, 1981-1988*

| | Equine predominant (%) | | Large animal exclusive (%) | | Large animal predominant (%) | | Mixed animal (%) | | Small animal predominant (%) | | Small animal exclusive (%) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1981 | 1988 | 1981 | 1988 | 1981 | 1988 | 1981 | 1988 | 1981 | 1988 | 1981 | 1988 |
| Rural area and small town (less than 50,000) | 39 | 44 | 87 | 75 | 96 | 95 | 87 | 87 | 77 | 74 | 30 | 42 |
| Moderate urban (50,001 to 500,000) | 34 | 29 | 9 | 19 | 3 | 4 | 11 | 12 | 19 | 18 | 39 | 33 |
| Large urban (500,001 or more) | 27 | 27 | 4 | 6 | 1 | 1 | 2 | 1 | 4 | 8 | 31 | 25 |
| Total | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |

Prepared by J. Karl Wise, PhD, Wisemark Associates, PO Box 681189, Schaumburg, IL 60168-1189.

This report is the sixth in a series of monthly Economic Notes summarizing results of the 1988 AVMA Biennial Economic Survey.

moderate- and large-size urban areas has decreased from 70% in 1981 to 58% in 1988.

Size of veterinary service area was related to practice type and community size (Table 3). Veterinary service area was defined as the mile radius of the area that composed 75% of the practice's clients. For all community sizes, the mean mile radius for a practice area ranged from a high of 31 miles for large animal exclusive practices to a low of 11 miles for small animal exclusive practices. The mean mile radius for large animal exclusive and small animal exclusive practices increased from 1981 to 1988, consistent with the shift of large animal practices to more urban locations, and the shift of small animal practices to less urban areas.

From AVMA's 1988 Biennial Economic Survey, it was determined that the mean number of other practices providing the same type of veterinary service (ie, large, small, or equine) within the defined veterinary service area ranged from a low of 4 practices for large animal predominant to a high of 10 practices for equine predominant (Table 4). Across practice types, there were approximately 4 other similar practices in the defined veterinary service area for practices located in rural areas and small towns. In large population areas, the mean number of similar practices in the defined veterinary service area ranged as high as 9 small animal practices, and 17 equine practices.

*Table 3—Size of veterinary service area by practice type and community size, 1988.*

| | Equine predominant (mile radius)* | Large animal exclusive (mile radius) | Large animal predominant (mile radius) | Mixed animal (mile radius) | Small animal predominant (mile radius) | Small animal exclusive (mile radius) |
|---|---|---|---|---|---|---|
| Rural area | | | | | | |
| (less than 2,500) | 26 | 26 | 21 | 21 | 19 | 17 |
| Small town | | | | | | |
| (2,500 to 50,000) | 29 | 35 | 24 | 22 | 17 | 13 |
| Moderate urban | | | | | | |
| (50,001 to 500,000) | | | | | | |
| City | 26 | | | 25 | 9 | 9 |
| Suburb | 24 | 30 | 36 | 18 | 14 | 8 |
| Large urban | | | | | | |
| (500,001 or more) | | | | | | |
| City | 24 | | | | 15 | 8 |
| Suburb | 27 | | | | 11 | 10 |
| All areas | 27 | 31 | 23 | 21 | 16 | 11 |

*Mean mile radius of veterinary service area that composes 75% of the practice's clients.

*Table 4—Mean number of similar practices in the defined veterinary service area, 1988.*

| | Equine predominant (%) | Large animal exclusive (%) | Large animal predominant (%) | Mixed animal (%) | Small animal predominant (%) | Small animal exclusive (%) |
|---|---|---|---|---|---|---|
| Rural area | | | | | | |
| (less than 2,500) | 7* | 4 | 4 | 4 | 3 | 4 |
| Small town | | | | | | |
| (2,500 to 50,000) | 7 | 5 | 3 | 5 | 4 | 5 |
| Moderate urban | | | | | | |
| (50,001 to 500,000) | | | | | | |
| City | 3 | | | 11 | 8 | 9 |
| Suburb | 12 | 6 | 5 | 7 | 9 | 6 |
| Large urban | | | | | | |
| (500,001 or more) | | | | | | |
| City | 17 | | | | 4 | 8 |
| Suburb | 10 | | | | 9 | 6 |
| All areas | 10 | 5 | 4 | 5 | 5 | 6 |

*Mean number of practices located within defined veterinary service area that provide the same type of veterinary service. Defined veterinary service area is the mean mile radius of veterinary service area that composes 75% of the practice's clients.

## References


1. Wise JK. 1987 income of US veterinarians. *J Am Vet Med Assoc* 1989;194:563-566.

2. Wise JK. Size and practice density of local veterinary service areas. *J Am Vet Med Assoc* 1983;183:233-234.